

## AGRICULTURAL INVENTIONS.

Mr. William Andrews, of Buffalo Grove, Iowa, has patented an improvement in horse hay forks. In this hay fork the number of parts employed is few, and the construction is simplified and cheapened. It is light and not liable to get out of order.

In the ordinary form of mould board plow the front edge of the share inclines as it extends to the rear from the point in front (which is embedded in the earth) to the landside of the previous furrow, and with this construction the point is jammed as the plow advances like a wedge into the solid earth, making the draught very great, for the reason that the point is far in advance of the relieving cutting edge which loosens and turns over the slice. To obviate this difficulty, Mr. Benjamin S. Benson, of Baltimore, Md., has invented a plow, in which he reverses the inclination of the share of the plow, and makes its forward edge first cut the slice at the wall of earth left by the previous furrow, the share then inclining to the rear deeper into the wall of earth, so that the cut is a share cut which constantly relieves itself instead of a wedging action which creates a constant jam.

Mr. Charles J. Gustaveson, of Salt Lake City, Utah Ter., has patented a hopple, consisting of curved plates inclosing or partly inclosing the legs of an animal, and having perforations which may be secured to hopple straps, the straps being connected by a twisted link chain having a swivel at each end.

An improved potato digger has been patented by Mr. Hiram Strait, of Troy, N. Y. This invention is an improvement upon a potato digger described in Letters Patent No. 210,061, granted to the same inventor November 19, 1873, and which belongs to the class in which a share for opening the soil is used in combination with a rotating fingered cylinder, by which the potatoes are separated from the soil and thrown out upon the surface.

An improvement in seed planters has been patented by Mr. James W. Robertson, of Hardin, Ohio. This invention relates to seed planters in which the seeds are dropped in hills by means of a rotating axle having feed wheels rigidly secured thereon, its object being to provide an adjustable marking or check rowing device, whereby the planter shall be adapted for planting seeds in rows of greater or less distance apart.

Mr. James M. Turley, of Onion Creek, Texas, has patented an improvement in machines for planting cotton, corn, and other seeds, and for sake of economy it may be made an attachment of a cultivator frame (the cultivating devices proper being in such case detached), although the machine may be made complete in itself.

An improvement in cornstalk harvesters has been patented by Mr. William I. Ely, of Freehold, N. J. The object of this invention is to improve the construction of the cornstalk harvesters for which Letters Patent No. 232,474 were granted to the same inventor September 21, 1880, in such a manner as to make them more convenient in use and more reliable in operation.

## Progress of the Northern Pacific Railroad.

The following is the latest information with regard to the material progress of the Northern Pacific Railroad and its branches. It will be seen that the great work is rapidly approaching its completion.

The track is now down in the Yellowstone Valley to a point 125 miles west of Glendive and 20 miles beyond the mouth of the Little Rosebud. The open winter has been favorable for work, and grading and track laying have scarcely been interrupted. There have been laid 90 miles of track in the Yellowstone Valley during the winter months. The company expect to reach Coulston, 225 miles west of Glendive, in the month of June, and to be at Bozeman, at the eastern slope of the Rocky Mountains, by September 1, making over 1,000 miles of completed track east of the mountains.

On the Pacific slope the road was opened last fall to Pend d'Oreille Lake. It will reach Pack River by the end of April, a distance of 245 miles from Wallula. Two hundred miles more of track are to be finished by September 30, which will bring the road to Missoula, in Western Montana, and open a continuous line of 670 miles eastward from Portland, Oregon. With the 135 miles of the Pacific Division, running to Puget Sound, this will make an aggregate of 805 miles of completed road on the Pacific slope. Work is also going forward on the Rocky Mountains division. Two tunnels, one near Helena and one at Bozeman, are being driven as rapidly as possible. The company has on hand at the Montana terminus 95 miles of steel rails, and on the Pacific side 160 miles, ready for track laying, with an additional 50 miles of steel rails on the way to the Pacific by sailing vessels.

The company is also constructing a number of branches to develop its land grant and serve as feeders to its main line.

In 1881 the company built 45 miles of the Casselton branch, diverging from the main line at Casselton, Dakota, 294 miles from St. Paul, and running to Mayville. It also graded the Little Falls and Dakota branch, from Little Falls to Morris, in Minnesota, a distance of 80 miles, the Fergus Falls and Black Hills road, from Wadena to Fergus Falls, in Minnesota, 50 miles, the Fargo and Southwestern branch, from Fargo 50 miles in a southwestern direction, and the Jamestown and Northern branch, for a distance of 25 miles. This year the company will lay the rails on the

Jamestown branch and the branch from Little Falls to Morris. It has already laid the rails on the road to Fergus Falls, and will complete it this season to Breckenridge, on the Dakota boundary, 30 miles further. The Casselton branch will be extended 95 miles, to the Canada line, where a connection will be formed with the Manitoba and Southwestern, a Canadian company, owned by those who control the Northern Pacific.

At the eastern end of the main line of the Northern Pacific the road has been finished to Superior City, and is under active construction 95 miles further to the Montreal River, the boundary line between Wisconsin and Michigan, where it is to meet a road now building westward from the Straits of Mackinac. The original charter of the company authorized an eastern terminus at the Montreal River, so the road from Superior City to that point must be regarded as a part of the main line. In Montana two branches are proposed. The company will locate, and perhaps grade, this summer, a line from Billings, at the eastern base of the Rocky Mountains, 60 miles in a southwestern direction to the Yellowstone Park, and contemplates a branch from Little Blackfoot River up the Deer Lodge Valley to Butte City, the chief mining point in Montana, a town now larger than Leadville, and yielding greater returns of the precious metals. On the Pacific slope a branch is under construction diverging from the main line of the Northern Pacific at a point 50 miles north of Wallula, and running eastward to Colfax in the celebrated Palouse wheat country. By the end of the year the company will have finished about 425 miles of branches. The policy of the company in constructing branches is to let about a year intervene between the grading and the track laying. During the year's delay settlers come into the country on the assurance of the early completion of the branch, and thus by the time it is opened for business there is traffic to sustain it.

## American Soap Bark and Soap Root.

The soap bark sold by every apothecary and used by all intelligent housewives for cleansing silk and other dress goods is obtained from the quillaja tree (*Quillaja saponaria*), a native of Chili. Some anxiety is expressed in *Nature* lest the supply shall fail through the indiscriminate cutting down of the trees, the demand for the bark having become considerable both for domestic use and for use by silk and wool manufacturers.

The *Colonies and India*, in drawing attention to this tree, remarks that a decoction prepared by placing a small piece of this bark and soaking it over night in water will remove in a minute or two grease from articles of clothing and leave the cloth clean and fresh as if it was new. It may also be used for cleansing hair brushes and other similar purposes under conditions in which soap and other alkalies are powerless. It is suitable for a hair wash, and is said to be largely used by French hair-dressers, though the mode of preparation is kept secret. Such a tree, it suggests, ought to be invaluable in Australia, New Zealand, Cape Colony, and other colonies where wool growing is a staple industry. *Nature* mentions among the uses to which this bark is put a preparation for giving an artificial froth or head to ales, a very small quantity put into beer that has become dead causing it to be covered with froth.

A vegetable rival to quillaja, common in our Southwestern territory and throughout Central America, is found in a species of cactus popularly known as amole. The Tucson (Arizona) *Citizen* describes the plant as having flower stalks destitute of leaves, but plentifully supplied with branches about eighteen inches long, from which flowers of white and yellow colors are suspended in the flowering season. The bulbous root is from one to six inches in diameter and from six to eighteen inches long.

A saponaceous juice is expressed from the root, and the fiber of the leaves is huddled for the manufacture of mattresses, cushions, and chair seats. The vegetable soap extracted from the root has been used by the Indians, Mexicans, and others for many years as a hair wash, and exceeds in purity our manufacture from animal substances.

The preservative qualities of the soap are well known, and its use gives the hair a fine natural glow, preventing decay of the hair, and entirely eradicating dandruff or other impurities on the scalp.

Cattle eat the leaves in the spring as a purgative. And cut into bits and thrown on water where fish abound the effect is stupefaction of the fish, when they can be easily taken.

The price among the Indians and Mexicans, who sell it in Tucson, is five cents for a bunch of two stalks interlaced (mancuerna).

For cleaning flannels the amole is found vastly superior to soap.

## Tracings on Glass for the Lantern.

The following method, by Mr. George Smith, appears to be satisfactory. A piece of finely-ground glass is rubbed over with a trace of glycerine, in order to make it as transparent as possible. It is now easy to write or draw on the prepared surface with a hard and finely-pointed blacklead pencil, and the glass is so transparent that the finest details of any engraving over which it may be placed can be seen quite distinctly. The drawing having been finished, the plate is washed with water, in order to remove the glycerine, and dried. A thin coat of Canada balsam or of negative varnish now serves to render the slide permanently transparent and ready for the lantern.

## Frictional Electricity.

About a year ago a white-beer brewery located at 43-45 Rheinsberger strasse, Berlin, burned, but it was soon rebuilt in a most substantial manner. Apart from the roof frame, it was constructed of stone and iron, with the floors laid in asphaltum. Located in the upper story of the malt house is a malt cleaning machine, from which the cleaned malt is conducted down, through an iron chute, to wagons in the lower stories, for distribution through the works. If the malt-cleaning machine remains a long time in operation—which frequently does occur without intermission for three weeks at a time—electricity is developed by friction of the malt in the iron chute; and in the most isolated portions of it, such is the tension of the electricity that sparks continuously flash here and there, the malt crackles throughout, and sparks fly from it to the hands of the employes. The men at first thought this was a demoniacal exhibition, until an expert calmed their fears. This gentleman, Herr Nehrlich, brought the subject before the Electro-technical Union, and the discussion thereupon caused statements from several members that they had noticed similar appearances in other breweries, etc. Dr. Werner Siemens showed how, through the existence of the asphalt floors, the malt room is so isolated from other portions of the building that it electrically resembles a Leyden jar.—*Allgemeine Versicherungs Presse*.

## Grain Freight Free to Liverpool.

The speculative holding of grain at Chicago for higher prices led, in the fore part of April, to some curious results. The export of grain had been stopped, the market rates at Liverpool being lower than those of Chicago. The railway officials refused to lower their rates, saying that they saw no good reason for sacrificing their revenues to enable the promoters of "corners" to adjust questions of supply and demand between themselves and consumers. The managers of certain ocean steamship lines having steamers billed for early departure were in great straits for freight, and even begged for grain to be carried as ballast, freight free. A press dispatch from Chicago, April 7, said that the day before the agents of the Eastern lines terminal there were asked by wire if they could not furnish small cargoes on condition that no charge should be made for transporting it by water to Liverpool. Again, on the 7th, the steamship people renewed their appeal, offering as additional inducement a premium of several cents per hundred pounds to the shipper. The offer of a premium was made by the four lines running between Boston and Liverpool. No offers of so unusual a nature were received from the New York lines.

## What is Aconitia?

The conviction of Dr. Lamson, in London, on the charge of murder by means of aconitia administered ostensibly as a medicine, has led to no little discussion of the nature of this violent but little understood poison.

A continental physician called attention to the fact that the drug sold under that name in France and Germany was different from and much less powerfully poisonous than the English drug. The *Lancet* says that it is true; that they differ markedly in general character and chemical composition, and also in their effects on the human system. In fact nearly a dozen kinds of aconitia are recognized, varying so much in their properties that observations made with any one of them would be applicable only to that particular specimen, and not to the others. It is generally admitted that English aconitia is seventeen times as strong as the German, but it is not uncommon to find one specimen seventy times as active as another. This discrepancy arises not only from differences in the mode of extracting the alkaloid, but also from want of care in the selection of the plants. In the British Pharmacopœia it is directed that the *Aconitum napellus* should be used, but there is only too much reason to fear that other species are not unfrequently substituted. Some manufacturers use *Aconitum paniculatum*, which is almost inert; while others, for the sake of obtaining a more active product, employ the *Aconitum ferox* the deadly Bish poison of India. Much of the aconite root now in the market is not the root of common monkshood, but is obtained from Japanese plants of undetermined species. Some specimens of aconitia are white, some are yellow, some are crystalline, and others are amorphous. It is stated on good authority that the commercial aconitia is not an alkaloid at all, but is a mixture of several different alkaloids or active principles. The whole question is still *sub judice*, and all statements respecting the properties, chemical or physiological, of aconitia, must be accepted with a certain amount of reservation.

## Copyright Mark on Pottery.

On April 5, the Senate passed a bill (S. No. 1582) which allows the copyright mark to be placed on the back of designs for moulded decorative articles, tiles, plaques, or articles of pottery or metal, or in such other place as manufacturers of such wares are accustomed to put their private marks and trade marks. The revised statutes previously required the copyright mark to be placed on the face of the article. The change will be beneficial to the large and increasing and very interesting industry which has grown up in Cincinnati, Ohio; Lakeville, Ohio; Chelsea, Massachusetts; and in Pennsylvania and New Jersey, in the manufacture of pottery, vases, encaustic tiles, and ornamental works of art, like busts and medallions.